UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,533	09/30/2005	Shen Zhao	11955/8	4330

757 7590 01/30/2009

BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, IL 60610

EXAMINER	
KIM, JOHN K	

ART UNIT	PAPER NUMBER
2834	

MAIL DATE	DELIVERY MODE
01/30/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/551,533	ZHAO, SHEN	
	Examiner	Art Unit	
	JOHN K. KIM	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/4/2008, 11/13/2006, 4/11/2006, 9/30/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is in response to papers filed on 12/22/2008. Amendments made to the claims and Applicant's remarks have been entered and considered.

2. Claims 1-10 are pending and are presented for examination.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/22/2008 has been entered.

Response to Arguments

3. Applicant amended claim 1 with new limitations and therefore arguments moot.

4. As claim 1 has been amended and added new limitation, the scope of claimed invention is significantly changed. As a result, new ground of rejection has been necessitated. Therefore, applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

5. The examiner's supplementary responses to the arguments are herewith presented.

6. As for Blaettner (US 5497039), the argument recites "… *Thus, Blaettner does not teach, disclose or even suggest that the radial thickness of the circumferential end portion is from 90% to 95% of the radial thickness of the circumferential center portion,*

as recited by independent claim 1". The examiner respectfully disagrees. Blaettner shows (in Fig. 3A-C) magnets whose thickness at center (A as defined by the applicant Fig. 1A) is larger than that of end portion (B as defined by the applicant Fig. 1A). Especially, Fig. 3B shows measured to be A=0.9 mm and B=0.85 mm and therefore B/A=0.94. Blaettner discloses the magnet thickness are such varied to reduce the cogging or reluctance torque and Fig. 3B is especially to have more efficient motor operation. (col. 13, line 5-19) Such magnet shaping is well known in the art for reduction of cogging so that noise, vibration, torque ripple, etc can be reduced. There are many design guides available at the time of the invention made. Sample references can be found with Yoshikawa et al (US 2003/0001449) and Ishikura et al (US 5105113). According to the known design guide, the optimal value can be obtained from motor parameters. Hence, it is selection of optimal value. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

7. As for Yamaguchi (US 4881002), the argument recites "… *Similarly, Yamaguchi does not disclose the distance from the radial outline of the center portion of each of the salient pole to the rotation center of the rotor core is not more than 99% of the distance from the radial outline of the circumferential end portion of each of the salient pole to the rotation center of the rotor core. … Yamaguchi simply discloses that the ratio b-to-a between the circumferential end portions is less than 0.8 (80%)".* The examiner respectfully disagrees. As Yamaguchi shows the claimed invention in Fig. 1-4. As the applicant correctly addressed, distance to center of the core is less than 99% of that to the end. Such core shaping is well-known in the art for reduction of cogging so that

noise, vibration, torque ripple, etc can be reduced. There are many design guides available at the time of the invention made. Sample references can be found with Furuya et al (US 6568066) and Gotou et al (US 4280072, Fig. 6).

8. As for Muller (US 4099104), the argument recites "… *Muller discloses an angle between a line connecting one of the circumferential outlines of the salient pole and the rotation center of the rotor core and the line connecting the other circumferential outline of the same salient pole and the rotation center of the rotor core is not less than 100 degrees. However, the Office Action simply identifies FIG. 10 of Muller and relies on hindsight reconstruction to provide the details lacking from the relied upon figure".* As the applicant correctly addressed, Muller shows the pole angle being simply more than 100 degree. It would have been obvious for those skilled in the art that simpler pole number is better for cost concerns and pole arc angle is better to be larger unless minimum slot opening is provided for winding insertion. That knowledge is not new for those ordinary skilled in the art. The applicant can find such design guide from many well known books. (e.g. "John Kuhlmann, Design of Electrical Apparatus, John Wiley and Sons, Inc, 1959") Core pole arc angle being over 100 degree for two pole machine is not something curious. See Muller (4099104), Doemen (US 4030005) and Fukuda et al (US 5811907). The core shapes are extremely similar to that in the application. Thus, the core shape in the application would have been obvious for those skilled in the art.

9. Please find 112 first paragraph rejection listed below.

Response to Amendment

10. The claim 1 has been amended with new limitations. The examiner reviewed amended claims and remarks as follows.

11. In claim 1, the applicant amended to add "… a proportional rotary torquer for a valve, the proportional rotary torquer comprising: …". The examiner regards underlined limitation as an intended use. Such a permanent magnet stator and coiled rotor motor has been occasionally used for throttle value control. See actuator 18 at Reimann (US 6646395).

Drawings

12. The drawing is objected to because of the following informalities: Fig. 5 is to show the rotor rotates from 0 to +180 degrees at the step of +20 degree. However, because of the reason mentioned in 112 first paragraph below, the rotor can not rotate as described. In such motor configuration, it is known to exhibit unstable or random direction rotation. Appropriate correction is required.

13. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

- Claim 5 refers "… *the facing surface at the circumferential end portion formed in the shape of a flat-cut surface*". Drawing for the claim 5 is not shown. One permanent magnet embodiment shown is for claim 3.

- Claim 7 refers "… *each of the facing surfaces formed in the shape of an elliptical surface*". Drawing for the claim 7 is not shown. One rotor core embodiment shown is for claim 6.
- Claim 8 refers "… *the facing surface at the circumferential end portion of the salient pole formed in the shape of a flat-cut surface*". Drawing for the claim 8 is not shown. One rotor core embodiment shown is for claim 6.
- Claim 9 refers "… the permanent magnet has two circumferential end portions, each of which has a non-magnetized region formed thereat". However, drawing for the claim 9 is not shown.
- Claim 10 refers "… one or more elastic members generating the torque at the magnitude proportional to the angular displacement of the rotor and in the direction opposite to the rotation direction of the rotor". However, drawing for the claim 10 is not shown.

These items must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes

made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

14. The disclosure is objected to because of the following informalities: Paragraph [0029] asserts the rotary torquer in the application can be applied to many other usages that requires continuous and governed rotation. However, those can not be applied as the motion of the rotary torquer in the application is only limited angular range due to wires connection to rotor. Appropriate correction is required.

Claim Objections

15. Claim 1 is objected to because of the following informalities: (1) The claim 1 recites "… *wherein the permanent magnet has two circumferential end portions and one circumferential center portion, and the radial thickness of the circumferential end portion is from 90% to 95% of the radial thickness of the circumferential center portion*; …" Since there are two circumferential end portions, it should be corrected to be "… *the circumferential end portions are the same from …;".* Appropriate correction is required.

Claim Rejections - 35 USC § 112

16. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites "… wherein an electric current is supplied (via wire 9) to the rotor coils (5), so that a relative angle position of the rotor and the stator is displaced;" and supported by Figs. 1-5. However, rotor as shown in Figs. 1A and 5(1st) is at equilibrium state before current is supplied. It is a well known problem that the motor of such symmetric shape and structure can not rotate to intended direction because of equally balanced torques. In such motor configuration, it is known to exhibit unstable or random direction rotation. There are many publications addressing this problem and solutions. Refer cited prior arts for such addresses; Hammes (US 2999952), Doemen (US 4030005) and Muller (US 4099104). The reason that those inventions show un-even pole shape is in order to produce rotating torque by breaking the balance. One of the scientific references that the examiner recommend to find is "Calculation of Parameters of Single-Phase PM Motor for Design Optimization", H. B¨ulent Ertan, *Member, IEEE*,

B¨ulent Da˘g, and G´erard-Andr´e Capolino, *Fellow, IEEE,* IEEE TRANSACTIONS ON ENERGY CONVERSION, VOL. 20, NO. 3, SEPTEMBER 2005. Beside those references, more depth scientific references are available from many sources.

Claim Rejections - 35 USC § 112

17. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(1) The claim 1 recites "… *wherein the permanent magnet has two circumferential end portions and one circumferential center portion, and the radial thickness of the circumferential end portion is from 90% to 95% of the radial thickness of the circumferential center portion*; …" The claim language is indefinite whether both two circumferential end portions have the same radial thickness or each ends can have independently different radial thickness each within the range from 90% to 95%. Since the disclosed invention in specification and drawings is of same radial thickness for both circumferential end portions, the claim language needs to be cleared accordingly. In examination, it is considered the same value.

(2) The claim 1 recites "… *wherein the distance from the radial outline of the center portion of each of the salient pole to the rotation center of the rotor core is not more than 99% of the distance from the radial outline of the circumferential end portion of each of*

the salient pole to the rotation center of the rotor core; …" The claim language is indefinite whether both two circumferential end portions of the rotor core have the same radial distance or each ends can have independently different radial thickness each within the range of not more than 99%. Since the disclosed invention in specification and drawings is of same radial distance for both circumferential end portions, the claim language needs to be cleared accordingly. In examination, it is considered the same value.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammes (US 2999952) in view of Blaettner et al (US 5497039) and in further view of Furuya et al (US 6568066) and Fukuda et al (US 5811907).

As for claim 1, Hammes shows (in Figs. 1-7) and discloses a proportional rotary torquer for a valve (intended use), the proportional rotary torquer comprising: a stator having two permanent magnets (10, 12); and a rotor having a rotor core (40) which two salient poles are formed at, and one or more rotor coils (38) are wound around; wherein an electric current is supplied via a wire (79, 80, Fig. 7) to the rotor coils (38), so that a relative angle position of the rotor and the stator is displaced; wherein the permanent magnet (10, 12) has two circumferential end portions (Fig. 2) and one circumferential center portion.

Hammes however failed to show or disclose *(1)* the radial thickness of the circumferential end portion is from 90% to 95% of the radial thickness of the circumferential center portion; *(2)* wherein the distance from the radial outline of the center portion of each of the salient pole to the rotation center of the rotor core is not more than 99% of the distance from the radial outline of the circumferential end portion of each of the salient pole to the rotation center of the rotor core; and *(3)* wherein the angle between the line connecting one of the circumferential outlines of the salient pole and the rotation center of the rotor core and the line connecting the other circumferential outline of the same salient pole and the rotation center of the rotor core is not less than 100 degrees.

Re *(1)*, Blaettner shows (in Fig. 3B) and discloses the radial thickness of the

circumferential end portion (102, 104) is from 90% to 95% of the radial thickness of the circumferential center portion (100). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Blaettner with that of Hammes to reduce the cogging or reluctance torque and to have more efficient motor operation (col. 13, line 5-19), and it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Re *(2)*, Furuya shows (in Figs. 7-9) and discloses the distance from the radial outline of the center portion of each of the salient pole to the rotation center (14) of the rotor core (13) is not more than 99% of the distance from the radial outline of the circumferential end portion (12) of each of the salient pole to the rotation center (14) of the rotor core. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Furuya with that of Hammes to reduce the cogging or reluctance torque. (col. 1, line 13-15)

Re *(3)*, Fukuda shows (in Figs. 1 and 3) and discloses the angle between the line connecting one of the circumferential outlines of the salient pole (25) and the rotation center of the rotor core (20) and the line connecting the other circumferential outline of the same salient pole (25) and the rotation center of the rotor core (20) is not less than 100 degrees. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Fukuda with that of Hammes to provide adequate magnetic path. (see abstract)

As for claim 2, Hammes in view of Blaettner and in further view of Furuya and Fukuda shows and discloses the claimed invention as applied to claim 1 above. Blaettner further teaches (in Figs. 1-3) the proportional rotary torquer is structured such that: the radial thickness of the permanent magnet (see 24 on Fig. 3B) at the circumferential end portions (102, 104) being smaller than the radial thickness of the permanent magnet at the circumferential center portion (100). In addition to that, Furuya further shows (in Figs. 7-8) the distance from the radial outline of the center portion of the salient pole to the rotation center (center of 14) of the rotor core (13) being smaller than the distance from the radial outline of the circumferential end portions (12) of the salient pole to the rotation center of the rotor core (13). In addition to that, Fukuda further shows (in Figs. 1 and 3) the angle between the line connecting one of circumferential outlines of the salient pole (25) and the rotation center (center of 23) of the rotor core (20) and the line connecting the other circumferential outline of the same salient pole (25) and the rotation center (center of 23) of the rotor core (20) being an obtuse angle.

As for claim 3, Hammes in view of Blaettner and in further view of Furuya and Fukuda shows and discloses the claimed invention as applied to claim 1 above. Hammes further shows (in Fig. 2) the rotor core (40) and the permanent magnet (10, 12) have facing surfaces facing each other, the facing surfaces of the rotor core and the permanent magnet formed in the shapes of the circular arc surfaces of which center positions are different from each other.

As for claim 4, Hammes in view of Blaettner and in further view of Furuya and Fukuda shows and discloses the claimed invention as applied to claim 1 above. Hammes further shows (in Fig. 2) the permanent magnet (10, 12) has a facing surface facing the rotor core (40), the facing surface formed in the shape of an elliptical surface (at each sides).

As for claim 5, Hammes in view of Blaettner and in further view of Furuya and Fukuda shows and discloses the claimed invention as applied to claim 1 above. Blaettner shows (in Figs. 1-3) the permanent magnet (24) has a facing surface facing the rotor core (28), the facing surface at the circumferential end portion (102, 104) formed in the shape of a flat-cut surface (Fig. 3A-C).

As for claim 6, Hammes in view of Blaettner and in further view of Furuya and Fukuda shows and discloses the claimed invention as applied to claim 1 above. Furuya shows (in Figs. 7-8) the rotor core (13) has two facing surfaces (8, and in view of Fukuda for 'two') respectively facing the two permanent magnets (line 1-3 in abstract, and in view of Hammes or Blaettner for 'two'), each of the facing surfaces (at center 8 and ends 12) of the rotor core (13) formed in the shapes of a plurality of circular arc surfaces (at center, at ends) of which center positions are different from each other.

As for claim 7, Hammes in view of Blaettner and in further view of Furuya and Fukuda shows and discloses the claimed invention as applied to claim 1 above. Furuya shows (in Figs. 7-8) the rotor core (13) has two facing surfaces (8, and in view of Fukuda for 'two') respectively facing the two permanent magnets (line 1-3 in abstract,

and in view of Hammes or Blaettner for 'two'), each of the facing surfaces formed in the shape of an elliptical surface.

21. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammes (US 2999952) in view of Blaettner et al (US 5497039) and in further view of Furuya et al (US 6568066) and Doemen (US 4030005) as applied in claim 1 above, and in further view of Muller (US 4099104).

As for claim 8, references however failed to show or disclose the rotor core has two facing surfaces respectively facing the two permanent magnets, the facing surface at the circumferential end portion of the salient pole formed in the shape of a flat-cut surface. In the same filed of endeavor, Muller shows (in Figs. 3, 10) core (10) has two facing surfaces (52, 53) respectively facing the two permanent magnets (43), the facing surface at the circumferential end portion (50) of the salient pole formed in the shape of a flat-cut surface. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Muller with that of Hammes in view of Blaettner and in further view of Furuya and Fukuda to produce leakage flux difference at both pole ends so that rotation to intended direction can be made. (col. 4, line 3-12)

As for claim 9, references however failed to show or disclose the permanent magnet has two circumferential end portions, each of which has a non-magnetized region formed thereat. In the same filed of endeavor, Muller shows (in Figs. 3, 10) and discloses the permanent magnet (43) has two circumferential end portions, each of

which has a non-magnetized region (76, 77) formed thereat. (col. 3, line 17-23) Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Muller with that of Hammes in view of Blaettner and in further view of Furuya and Fukuda for stable control of motor. (col. 3, line 17-23)

22. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hammes (US 2999952) in view of Blaettner et al (US 5497039) and in further view of Furuya et al (US 6568066) and Doemen (US 4030005) as applied in claim 1 above, and in further view of Guttinger (US 4296341).

As for claim 10, references failed to show or disclose the proportional rotary torquer further comprises one or more elastic members generating the torque at the magnitude proportional to the angular displacement of the rotor and in the direction opposite to the rotation direction of the rotor. In the same field of endeavor, Guttinger teaches (in Fig. 1) the proportional rotary torquer further comprises one or more elastic members (18) generating the torque at the magnitude proportional to the angular displacement of the rotor and in the direction opposite to the rotation direction of the rotor. (col. 3, line 30-39) Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Guttinger with that of Hammes in view of Blaettner and in further view of Furuya and Fukuda to provide a friction. (col. 3, line 34-38)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN K. KIM whose telephone number is (571)270-5072. The fax phone number for the examiner where this application or proceeding is assigned is 571-270-6072. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on 571-272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen P Leung/
Supervisory Patent Examiner, Art Unit 2834

JK